

**WHAT IS CLAIMED IS:**

1           1.     A catalyst ink for a fuel cell comprising a catalytic material and  
2 poly(vinylidene fluoride).

1           2.     The catalyst ink of claim 1, wherein the catalytic material comprises Pt.

1           3.     The catalyst ink of claim 1, wherein the catalytic material comprises Pt and  
2 Ru.

1           4.     The catalyst ink of claim 1, further comprising a second ionomer.

1           5.     The catalyst ink of claim 5, wherein the ionomer comprises a liquid  
2 copolymer of tetrafluoroethylene and perfluorovinylethersulfonic acid.

1           6.     A process for making a catalyst ink for a fuel cell, comprising mixing  
2 components comprising a catalytic material and poly(vinylidene fluoride).

1           7.     The process of claim 6, further comprising adding to the mixture a membrane  
2 plasticizer.

1           8.     The process of claim 7, wherein the plasticizer is a high boiling solvent.

1           9.     The process of claim 7, wherein the plasticizer is N,N dimethylacetamide.

1           10.    The process of claim 6, further comprising adding to the mixture a second  
2 ionomer comprising a liquid copolymer of tetrafluoroethylene and  
3 perfluorovinylethersulfonic acid.

1           11.    A process for making an electrode for a fuel cell, comprising:  
2 (a)   providing a catalyst ink comprising a catalytic material and poly(vinylidene  
3 fluoride); and

4 (b) applying the catalyst ink to at least one side of a substrate.  
5

1 12. The process of claim 11, wherein the substrate is a membrane.  
2

1 13. The process of claim 12, wherein the membrane is a PSSA-PVDF membrane.  
2

1 14. The process of claim 11, wherein the ink further comprises a plasticizer.  
2

1 15. The process of claim 14, wherein the plasticizer is N,N dimethylacetamide.  
2

1 16. The process of claim 12, further comprising roughening the surface of the  
2 membrane prior to applying the catalyst ink.  
3

1 17. The process of claim 12, wherein the substrate is a backing.  
2

1 18. The process of claim 17, wherein the backing is a carbon paper.  
2

1 19. A process for making a membrane electrode assembly for a fuel cell,  
2 comprising:

3 (a) providing a catalyst ink comprising a catalytic material and poly(vinylidene  
4 fluoride);

5 (b) applying the catalyst ink to at least one side of a membrane; and

6 (c) bonding the membrane to at least one electrode.  
7

1 20. The process of claim 19, wherein the membrane is bonded to the electrode at a  
2 temperature of greater than about 180 °C.  
3

1 21. The process of claim 19, wherein the catalyst ink further comprises a  
2 plasticizer.  
3

1 22. The process of claim 21, wherein the plasticizer is N,N dimethylacetamide.

